

WHAT IS CLAIMED IS:

1. A process for separating oil from oil-containing solids comprising:
contacting the oil-containing solids with an isohexane solvent to
form an extraction mixture;
wherein the isohexane solvent has a wet dew point at 325 mm Hg
of at least 97°F and comprises:
at least about 85 wt.% methylpentane; and
no more than about 0.1 wt.% hydrocarbons having less than
6 carbon atoms.
2. The process of claim 1, wherein the isohexane solvent has a wet
dew point at 350 mm Hg of at least 101°F.
3. The process of claim 1, wherein the isohexane solvent has a wet
dew point at 325 mm Hg of no more than 105°F.
4. The process of claim 1, wherein the isohexane solvent further
comprises no more than about 10 wt.% dimethylbutane.
5. The process of claim 1, wherein the isohexane solvent further
comprises no more than about 3 wt.% 2,2-dimethylbutane.
6. The process of claim 1, wherein the isohexane solvent includes at
least about 35 wt.% 3-methylpentane.
7. The process of claim 1, wherein the isohexane solvent includes no
more than about 10 parts per million benzene.
8. The process of claim 1, wherein the isohexane solvent includes at
least about 25 wt.% 3-methylpentane and no more than about 3 wt.%
2,2-dimethylbutane.

9. The process of claim 1, wherein the oil-containing solids are derived from plant material.

10. The process of claim 9, wherein the plant material includes material derived from plants selected from the group consisting of corn, soybean, coconut, safflower, sunflower, cotton, rape, sesame, palm, flax, peanut, and any combination thereof.

11. The process of claim 9, wherein the plant material includes corn germ.

12. The process of claim 9, wherein the plant material includes soybeans.

13. The process of claim 1, wherein the isohexane solvent includes at least 99.9 wt.% branched saturated aliphatic hydrocarbons having 6 carbon atoms.

14. The process of claim 1, further comprising separating the extraction mixture into a solids-containing fraction and an oil-containing solvent fraction.

15. The process of claim 14, further comprising separating the oil-containing solvent fraction into a low solvent-oil fraction and an oil-depleted solvent fraction.

16. The process of claim 15, wherein separating the oil-containing solvent fraction includes heating the oil-containing solvent fraction under vacuum to form the low solvent-oil fraction which includes no more than about 100 ppm isohexane solvent.

17. A process for separating oil from oil-containing solids comprising: contacting the oil-containing solids with an isohexane solvent to form an extraction mixture;

wherein the isohexane solvent has a wet bubble point at 375 mm Hg of at least 97°F and comprises at least about 85 wt.% methylpentane.

18. The process of claim 17, wherein the isohexane solvent includes at least about 90 wt.% methylpentane.

19. The process of claim 17, wherein the isohexane solvent includes no more than about 3 wt. % 2,2-dimethylbutane.

20. The process of claim 17, wherein the isohexane solvent has a wet bubble point at 375 mm Hg of no more than 102°F.

21. A process for separating oil from oil-containing solids comprising: contacting the oil-containing solids with an isohexane solvent to form an extraction mixture;

wherein the isohexane solvent comprises:

at least about 84 wt.% methylpentane;

no more than about 7 wt.% 2,2-dimethylbutane;

no more than about 0.1 wt.% hydrocarbons having less than 6 carbon atoms; and

no more than 10 parts per million benzene.

22. The process of claim 21, wherein the isohexane solvent includes at least about 35 wt.% 3-methylpentane.

23. The process of claim 21, wherein the isohexane solvent includes at least 99.95 wt.% branched saturated aliphatic hydrocarbons having 6 carbon atoms.

24. A process for separating oil from oil-containing solids comprising: contacting the oil-containing solids with an aliphatic hydrocarbon solvent to form an extraction mixture;

wherein the aliphatic hydrocarbon solvent has a wet bubble point at 760 mm Hg of 134.5°F to 140°F and comprises:

at least about 85 wt.% methylpentane; and
no more than about 1.0 wt.% n-hexane.

25. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes no more than about 10 wt.% dimethylbutane.

26. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes no more than about 3 wt.% 2,2-dimethylbutane.

27. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes at least about 30 wt.% 3-methylpentane.

28. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes at least 99.9 wt.% branched saturated aliphatic hydrocarbons.

29. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes at least 99 wt.% saturated aliphatic hydrocarbons.

30. The process of claim 24, wherein the aliphatic hydrocarbon solvent includes no more than about 0.1 wt.% hydrocarbons having less than 6 carbon atoms and no more than about 10 ppm benzene.

31. An isohexane solvent comprising:
at least 90 wt.% methylpentane;
at least 1 wt.% 2,3-dimethylbutane;
no more than 1 wt.% 2,2-dimethylbutane;
no more than 1 wt.% n-hexane;
no more than 0.1 wt.% hydrocarbons having less than 6 carbon atoms; and
no more than 10 parts per million benzene.

32. The isohexane of claim 31 having a wet bubble point at 375 mm Hg of at least 98°F.

33. The isohexane of claim 31 having a wet dew point at 325 mm Hg of at least 98°F.

34. The isohexane of claim 33 having a dry point of no more than 160°F.

35. A method of producing a plant based oil product comprising:
separating a solids-containing fraction from an oil-containing solvent fraction; and
transferring energy to the oil-containing solvent fraction in an initial distillation stage to produce a vapor phase at a pressure P in mm Hg and having a temperature of at least X°F and no more than Y°F where:

$$X = 97 + ((P - 350) / 7.14);$$

$$Y = 105 + ((P - 350) / 7.14); \text{ and}$$

P has a value of about 300 to 400 mm Hg.

36. The method of claim 35, wherein:

$$X = 98 + ((P - 350) / 7.14).$$

37. The method of claim 35, further comprising contacting an oil-containing solids with an isohexane solvent to form an extraction mixture; and separating the extraction mixture into the solids-containing fraction and the oil-containing solvent fraction; wherein the isohexane solvent comprises

at least 90 wt.% methylpentane;

no more than 1 wt.% n-hexane;

no more than 0.1 wt.% hydrocarbons having less than 6 carbon

atoms; and

no more than 10 parts per million benzene.